

Program Abstracts

Workshops, Saturday, 9:00 am – 12:00 pm

Cartographic Basics

Basics of Cartography

James L. LeBeau

The rapid growth of agencies adopting and implementing GIS and automated mapping for use in criminal justice has been phenomenal. During the rush to get going with mapping new users have focused on the technology of making maps (e.g., How do you get the computer to make a map?) while ignoring the science and art of mapmaking. This serious oversight limits the efficiency, effectiveness, and in some instances, credibility of crime mapping. This workshop is a three-hour discussion and illustration of the important basics of cartography. Discussion topics include basic elements of a map, generalization and scale, coordinate systems and projections, symbols and visual variables, color design, and different types of thematic maps.

Crime Analysis, Crime Mapping, and the Web

Crime Mapping and the Web

Rachel L. Boba, Mary Velasco

As an increasing number of police departments are posting crime analysis and mapping information on the Internet and Intranet, the need for guidelines and a dialogue concerning why and how to post such information on the Web is important. A quick search of the Web for police department crime statistics pages yields information with various formats and quality. This workshop assists police practitioners in posting timely, accurate, and useful information for the Web, in a professional manner. The presentation gives guidelines and considerations, a demonstration of creating a Web site, and critiques of current Web sites containing crime analysis and mapping information. The workshop will be relevant for police professionals who are responsible for creating and posting the crime analysis and crime mapping information as well as police administrators studying the impact for their agencies of publishing this information. Privacy and confidentiality of information and address specificity in crime mapping will be discussed at length throughout the workshop. Attendees will learn general guidelines to follow, participate in a discussion of these issues, and evaluate current police agency Web sites that show crime analysis and crime mapping information.

Data Scrubbing for GIS

Improving Your Geocoding Hit Rate Using Office Applications

Christopher S. Gebhardt

Attendees will learn how they can use simple office productively software to better manage their address matching ability. Through spreadsheet and database tricks, tips, and functions, attendees will discover a world of tools that they already own to improve their hit rate. The presenter will cover using Microsoft's Office suite of products with live address data. Included will be:

- Access Queries for Address Cleanup
- Excel Functions for Single Address Problems

- Visual Basic for Applications Code to Process Batch Addresses
- Excel Functions for Batch Processing

At the conclusion of the presentation, attendees will be provided with a free address geo-verification tool for Microsoft Access.

Finding Statistically Significant Crime Hot Spots

Finding Statistically Significant Crime Hot Spots

Arthur Getis, John R. Weeks

This three-hour workshop on applications of pattern analysis in a Geographic Information Systems (GIS) environment shows how to identify statistically significant crime clusters. The workshop features illustrated lectures by two senior researchers in this field and an exercise demonstrating the principles outlined in the discussion. The workshop lectures will emphasize the fundamental principles and examples of using spatial pattern analysis to find clusters of crime. Sound statistical methods for identifying clusters distinguish the workshop's approach, as reviewed by Craglia, Haining, and Wiles (*Urban Studies*, 37, (4), 711-729, 2000) and overcome limitations of a key crime cluster package produced earlier. The discussion demonstrates theory and real world examples taken from work with the San Diego and Carlsbad, California, police departments. Demonstrating concepts covered in the lectures, the workshop exercises use software tools ArcView and Point Pattern Analysis and clustering software developed by Lauren Scott.

Getting Started with GIS

Getting Started with GIS

Kurt Smith, Deborah Thomas

No prior knowledge is required for this workshop, designed for participants who want to learn the basics of crime mapping. By the end of the session, participants will be able to explain the term "crime mapping," understand and apply basic concepts and components of GIS, realize and discuss the importance of data process and dissemination for GIS, and identify free software and geographic data sources to jump-start crime mapping and analysis. They will understand how to use mapping to support patrol, investigations, and other functions; and be able to describe technological GIS innovations on the horizon.

Integrating GIS in a Law Enforcement Organization

Implementing GIS Into a Law Enforcement Agency

Matthew White

This workshop is for crime analysts, criminal justice managers, and information technology personnel who have a basic understanding of GIS and information systems. Strategic planning, needs assessments, and implementation issues related to GIS will be among the primary areas of focus. Topics will include data management, integration issues, "selling" GIS, system acquisition, common obstacles, sources of assistance, and examples of what agencies are doing.

Mapping for Managers

Mapping for Managers

Tom Casady

This session will challenge those who supervise or manage crime mapping operations to think about how to improve the relevance of crime mapping to operational police personnel. A discussion of the current state of practice in crime mapping will be facilitated, and the instructor will present his own thoughts and experiences about moving crime mapping to a wider audience. The session will focus on strategies for deploying interactive crime mapping and analysis capabilities, improving the timeliness of mapping information, maximizing the use of other data sources, and making crime mapping software more approachable for personnel with limited training and experience.

Tactical Crime Analysis with GIS

Tactical Crime Analysis with GIS: “Lopping Off the Criminal”

Dan Helms

Identifying the activity space of a serial offender by means of journey-to-crime estimation, “geographic profiling,” investigative psychology, and other means has been an exciting and often productive discipline within tactical crime analysis, made possible by advances in GIS technology. In this workshop, attendees will be given an overview of some of the methods now in use around the world and introduced to some of the basic principles and terminology in this type of tactical investigative forecasting.

In addition, a new technique, lopping, will be demonstrated and explained. Although not applicable to every case, this very simple, straightforward, and intuitive method can be used effectively by any crime analyst, even those lacking a comprehensive GIS. The history of this method, its use in real-world crime series, and its practical application in any jurisdiction will be explored. Attendees will come away with a powerful, simple, and direct addition to their arsenal of tactical techniques.

Workshops, Saturday, 1:30 pm – 4:30 pm

Addressing Issues of Data, Privacy, and Confidentiality

Addressing Issues of Data, Privacy, and Confidentiality

Julie Wartell

This workshop will cover many issues relating to privacy and crime mapping. Participants will discuss the broad concept of providing maps and data outside their agencies agency as well as specific issues regarding crime mapping on the Internet, sharing data across agencies, and sharing data with researchers. The group will look at what is currently being done and offer guidance on ways to share crime data and maps. Participants will leave the session with a greater understanding of these controversial issues and some tips for making decisions in an agency on how best to implement crime mapping on the Internet. The workshop will be very interactive; participants will have the opportunity to share their views and experiences.

Census 2000: Applications for Research and Practice

Census 2000: Applications Workshop

Keith Harries

Census data are a potentially valuable resource for crime analysis. Crime is a social phenomenon and the census is the principal national social data resource. In the late 1990s, the 1990 Census became less relevant and more and more outdated. However, the 2000 Census of Population and Housing now provides relatively timely information about communities. The data can be accessed and used in a variety of ways. This workshop will review census and census-related resources and demonstrate how these resources can be used in support of understanding community dynamics, including crime and crime analysis. Topics to be addressed include the census survey instruments, fundamentals of census geography, data access and mapping, understanding the structure of census files, alternative census indicators, identifying at-risk neighborhoods and monitoring neighborhood change, understanding the dimensions of juvenile populations, migration, housing, ethnicity, occupational structure, and index construction. A new census tool, the American Community Survey, will also be discussed.

CrimeMap Tutorial: ArcView Version

Hands-On Workshop for ArcView 3.X

Wilpen L. Gorr

Attendees who are newcomers to GIS and crime mapping can benefit from this workshop. They need to bring their own PC laptop computer with ArcView 3.x installed and have at least 15MB of free space on the c:\ hard drive and have a CD drive or diskette drive. The instructor will provide hard copies of CrimeMap Tutorial plus data files on diskette or CD for loading on attendees' computers. Alternatively, participants can download the data ahead in advance from the CMRC website. Please come a half hour early to load data. The instructor will present short lectures on GIS and crime mapping, and attendees can then work at their own pace through parts of CrimeMap Tutorial. To learn more about the free CrimeMap Tutorial, see <http://www.ojp.usdoj.gov/cmrc/> and take the Training/TA link. Attendees will get an overview of GIS and commercial base maps available for building a crime mapping system. They will also build pin and area maps that are central to crime mapping. After completing the workshop, attendees should be comfortable reviewing or completing CrimeMap Tutorial or similar tutorials on their own.

Crime Analysis on a Budget

Crime Analysis on a Budget: How to Create an Efficient Intelligence-Led Policing Network with Tools You Probably Already Have at the Office

Jonathan Alston, Christopher G. Mowbray, John Warden

The field of GIS and Crime Mapping is new, innovative and exciting. The use of intelligence based technology will make future analysis much easier and efficient. Unfortunately, it is difficult to fully implement such an intelligence network without incurring large start-up costs and a substantial long-term budgetary commitment. This workshop will show how the Edmonton Police Service (EPS, Alberta, Canada) was able to develop an intelligence-led policing network with a minimal budget and using software and resources already owned or used by the EPS. Concrete examples of past and current administrative, strategic, and tactical analysis will be used to show how this was done. This includes the development of an MS Access based gang database, a

mapping based sex offender registry, a warehouse for frequently used and requested crime maps, a next-day service wide crime map delivery system, and a training resource for members wanting to learn more about crime mapping.

Environmental Criminology and Crime Mapping: The Importance of Theory

Theory of Environmental Criminology

Patricia L. Brantingham, Paul J. Brantingham

Behind many aspects of crime mapping is the theory of environmental criminology developed in the 1980s by authors including Patricia and Paul Brantingham. With the widespread development and use of mapping, much of the background theory has become valuable in a real, practical way. Knowledge of this theory helps practitioners when developing specific programs using crime mapping. This workshop will provide hands on illustrations of how the theory relates to daily analysis of data.

Government Partnerships Through Enterprise GIS

Government Partnerships Through Enterprise GIS

Thomas A. Evans

This workshop will examine the steps that were necessary to plan, analyze, design, implement, and review use issues that in the development and delivery of an enterprise data and crime mapping initiative in Pinellas County, Florida. The workshop evaluates documentation that was developed to establish policies, training programs, interagency data sharing agreements, data standards, and various delivery and security methods. As an example, Pinellas County's Enforcer Geographic Information System Project will be presented. The Enforcer is an enterprise data and crime mapping initiative intended to provide cross-jurisdictional data sharing and crime mapping/analysis capabilities for all of Pinellas County's law enforcement agencies in partnership with other county and state agencies. The system begins to erase previous limitations on sharing jurisdictional crime information. As in all enterprise data systems, individual agency's offense/incident data is integrated into a central system. The data is transformed into useful information and delivered back to local agencies using a common web browser. Connectivity is achieved using an existing intranet or a VPN/ICA solution.

The robust user-friendly interface allows users to access Pinellas County's geographic information system with hundreds of geographic layers. Agencies can also use the information to analyze crimes, generate reports, perform parcel inquiries, manage sexual predator information, manage disaster preparedness, allocate manpower and resources, and other useful administrative functions.

Introduction to CrimeStat II: A Toolbox for Analysis of Crime Incidents

Introduction to CrimeStat II: A Toolbox for Analysis of Crime Incidents

Richard Block, Ned Levine

CrimeStat is an easy-to-use toolbox for the analysis of crime incident location and concentration. It accepts input and produces output to Arc View and MapInfo as well as other programs (Maptitude, Streets on a Disk). It is specifically designed to aid the crime analyst in the study of incident point patterns, and the software is free from CMRC. In this "how to" workshop, analysis using CrimeStat will be done in real time beginning with incident information brought in from MapInfo and ArcView and continuing with description, interpolation, and hot spot analysis. Special emphasis will be placed on hot spot analysis and the implementation of

STAC (Statistical Analysis of Crime) in CrimeStat II. For each tool, the parameter settings will be explained, the printed output will be interpreted, and the incorporation of graphical output into ArcView and MapInfo will be demonstrated. Finally, limitations of the CrimeStat toolbox will be discussed.

The learning curve for CrimeStat is neither steep nor long. None the less, it is daunting for some analysts. The object of this session is to show how easily, quickly, and usefully CrimeStat can be added to the crime analyst's toolbox.

National Guard GIS Technology Programs to Support Counterdrug Law Enforcement

National Guard GIS Technology Programs to Support Counterdrug Law Enforcement

Melinda K. Higgins, Michael L. Thomas

The National Guard Bureau - Counterdrug Office (NGB-CD, through its Counterdrug Geographical Regional Assessment Sensor System (CD-GRASS) program has incorporated and collaboratively networked many technologies including a decision support system (DSS) fusing geographical information systems (GIS), operational intelligence, historical mission data, and remote sensing imagery, to support counterdrug operations; a digital mapping server (DMS) incorporating ArcIMS (Internet map server) for dedicated mapping and GIS support to NGB-CD and drug law enforcement agencies; GIS support to counterdrug law enforcement through NGB-CD's Digital Mapping Center (DMC); and counterdrug GIS training (CD-GIST) programs, as well as other technology evaluation tasks.

The success of CD-GRASS is due to partnership with 21 federal, state, and local law enforcement agencies, universities, and non-profit organizations. NGB-CD is expanding into the NGB-CD Technology Consortium, which will foster collaboration among a wide variety of agencies to enhance counterdrug law enforcement operations. This workshop highlights technology support to law enforcement through these programs (GIS, training, and applications to field operations). See <http://ngbcdtech.gtri.gatech.edu> for more information.

The workshop focuses on a single counterdrug operational scenario that provides data for the presentation, which will be broken down into three parts: (1) Understanding the data. Some minimum introduction to ArcView and a brief introduction to using GIS with basic data sets is given (this highlights the NGB-CD Counterdrug GIS training programs). (2) Planning the mission. Attendees will help put together maps necessary for planning the operation (this highlights the DSS, DMS, and DMC). (3) Deployment and field operations. Finally, the attendees will explore issues of using maps and GIS information in the field (this will also highlight the DMS and DMC - topics will include communications, operational GIS technologies, and overall evaluation of what is working and what's not).

Concurrent Panels, Sunday, 3:15 pm – 4:45 pm

Community Characteristics and Crime

Broken Windows Revisited: Do Code Violations Predict Serious Crime?

Katrina Baum

For much of the 1980s and 1990s, the "broken windows" thesis was widely accepted, and its tenets were adopted into methods of policing such as order-maintenance and community policing. However, the

theory has recently been the subject of scholarly debate and demands further study. This presentation will discuss research that uses GIS to explore the relationship between disorder, property, and serious offenses. This data will then be used to test a predictive model and its preliminary findings.

Exploring the Spatial and Temporal Dynamics of Crime Before, During, and After Implementation of Community Development Initiatives in Delray Beach, Florida

Jamie Price, Thuy Pham

This presentation will use GIS to assess the relative impacts of community and neighborhood revitalization on crime. Using data from calls for service and arrests, spatial and temporal aspects of crime will be analyzed in concert with community development initiatives occurring in Delray Beach, Florida. Guided by crime and place theory, the relationship between the distribution of different crime types and the physical and social environmental characteristics in the experimental area will be examined. Specifically, the following primary questions will be addressed: (1) How does the overall crime rate in Delray Beach compare to the crime rates in revitalized areas before, during, and after the implementation of community development initiatives? And (2): did crime displacement and/or benefits of diffusion occur in the revitalized areas with respect to location, time of occurrence, and/or type of activities?

Spatial Linkages Between Unemployment and Crime Rates

Sanjeev Sridharan

The research implements exploratory and confirmatory spatial methods to study the linkages between unemployment and crime rates. The approach integrates both routine activity and social disorganization theories of crimes. From a social disorganization perspective, the project focuses on defining spatial regimes at the county-level to operationalize notions of community networks. Spatial panel data methods are implemented to operationalize the opportunity and motivational effects of unemployment on crime. This approach utilizes the linkages between Geographic Information Systems (GIS) software and methods of spatial econometrics.

Electronic Access to the National Criminal Justice Reference Service (NCJRS)

Electronic Access to National Criminal Justice Reference Service (NCJRS)

William A. Ballweber

This presentation focuses on the latest features of the NCJRS website, including Topics, Subtopics, In The Spotlight, Online Conference Calendar, the Online Store, the NCJRS Abstracts Database, and Virtual Library. Weekly accessions, sources, and related links will be addressed. Search tips for using the NCJRS Abstracts Database and Virtual Library will be covered in more detail to help users maximize search coverage and minimize time.

Offender Tracking

Insights Into the Analysis and Patterns of Offender Journeys to Crime

Spencer Chainey

Theories of offender journeys in high volume crime (i.e., those crimes such as residential burglary, robbery, and vehicle crime) point towards offenders committing such crimes close to their places of residence.

The theory of journey patterns also suggests that the younger the offender, the shorter the distance they travel to commit crimes. Analyzing offender journeys to crime has often been difficult in the United Kingdom due to the poor quality of offender data, particularly where a standardized process is required to link the crimes an offender is accused of with the offender's place of residence.

Recent data improvements in the London Borough of Harrow have created more timely and better informed opportunities to explore in detail the patterns of offender journeys to crime. These journey patterns can also be analyzed against the general profile of the offender, including age, sex, ethnicity, and other types of crimes they commit. The source location profile of offenders would also help analysts to explore whether relationships exist between areas that have similar socio-economic characteristics. This information could then be potentially valuable for directing intervention initiatives in a more proactive manner. Understanding what each hotspot of crime offers as a 'pull' to attract offenders would also be valuable, particularly for those offenders who come from areas outside the jurisdiction of the local partnership against crime and disorder.

This research presents findings from work carried out in the London Borough of Harrow, which has explored the journey patterns of offenders. Particular focus has been placed on the patterns of youth offending because of the significant contribution of this age group to Harrow's crime and disorder problems. Methodologies for analyzing journey patterns are also explored, based on the different spatial geometries of Manhattan and Euclidean distances. The research also explores options for using routing algorithms that trace the road network in an effort to more accurately model offender paths.

On the Trail of the Beast: Tracking Serial Sexual Offenders in Detroit, Michigan, and the Development of Preliminary Typologies

Eric E. Barnes, Renne Hall

"Somewhere in our past, we must have corrupted or twisted nature, for we have made wolves out of men who were not born as such."

Presentation Description. If it is true that "a picture is worth a thousand words," then how many words is a map worth, or a map with multiple layers of data? In the fight against crime the right map can be priceless. This presentation describes and discusses the development of a mechanism to track serial sexual offenders in Detroit, Michigan. Using purposeful crime mapping, the study examines the offender's modus operandi, temporal and geographical distribution of offenses, and the specifics of their target selection. The offenders are categorized in one of three distinct typologies, dichotomized based on the offender's premeditation and use of "criminal logic." The sociological, criminological, and psychological cues are examined and discussed using geospatial analysis and GIS. Several actual case studies will be discussed, and the maps used to track these individuals will be displayed. Recommendations will also be made on how one may replicate this study in other jurisdictions. There will also be an opportunity for questions and answers.

Sample Population. Three years' worth of data (1998-2000) on sexual assault in the city of Detroit was compiled and analyzed, and from this sample several distinct and sustained serial patterns were uncovered. Through the use of criminalistics and physical evidence (DNA, fingerprints, etc.), any unique series of crimes were attributed to the individual or individuals responsible. Physical cues as well as environmental criminological concerns were examined to determine any potential influence on the offender and any significant preferential choice of victims. During the course of this study, several active offenders were discovered; and a dedicated serial sexual offender was identified. With the help of GIS and mapping, this offender was tracked and apprehended.

Summary. GIS crime mapping is no longer just an innovative tool to be discussed theoretically, and maps are no longer only to be judged like works of art. Both have become valuable tools in the hands of experienced law enforcement personnel, crime analysts, and criminologists who seek to identify, analyze, and apprehend criminals. GIS is not only a tool, but guides law enforcement practitioners through the trail of whatever the "Beast" may be seeking.

Linking Offender Residence Probability Surfaces to a Specific Incident Location: An Application for Tracking Temporal Shifts in Journey to Crime Relationships and Prioritizing Suspect Lists and Mug Shot Order

Richard Z. Gore, April Pattavina

Intensity surfaces (hot spot analysis), generated from crime incident locations, has found wide use in tactical applications. Other types of point data are often available that may offer utility. Offender residence is one such example. The methods used to analyze offender residence data are somewhat similar to those employed in hot spot analysis but may have use in investigative as well as tactical decisions.

An offender residence-incident database, RID, can often be derived from department records and would include offender residence, offender characteristics, incident classification and incident location for the preceding year. A simple density surface created from all offender residences for a large city will show the obvious but not particularly useful fact that the offender population is not evenly distributed.

An offender residence probability surface generated for any area large enough to include a significant number of incidents from the RID offers more useful information. Around a crime location a circle is drawn large enough to yield a significant sampling of neighborhood incidents. This search can include all crimes or just crimes similar to that being investigated. A probability surface is constructed for the offender residences associated with the incidents from this neighborhood sampling. A case-specific approach can generate a surface for each kind of factor in the RID applicable to the investigator's information and combine them to yield an accumulation surface. These surfaces could be used to prioritize a large list of suspects generated from traditional description and modus operandi database queries or to order the mug shots for witness inspection. The comparison of offender residence probability surfaces for any specific area based on two separate time intervals might also be valuable in tracking shifting journey to crime relationships, predicting displacement, and assessing the impact of crime suppression policies.

Topics in Spatial Analysis

Geocoding Options for Greatest Accuracy, and a First Estimate of a Minimum Geocoding Hit Rate

Jerry Ratcliffe

Spatial crime analysis relies on accurate geocoding but how accurate are current methods? Geocoding is the common task of converting crime locations into grid coordinates and is performed regularly by most crime mappers. This presentation examines the accuracy of TIGER-type geocoding in relation to cadastral records and census tracts. Results from a study of over 20,000 addresses in Sydney, Australia, using a TIGER-type geocoding process suggest that up to eight percent of addresses may be misallocated to census tracts, and more than 50 percent may be given coordinates within the land parcel of a different property.

The second half of the presentation seeks to answer another seemingly simple question: what is a minimum geocoding hit rate? The elusive answer to this question is approached by the use of Monte Carlo techniques with a number of crime patterns used to simulate a declining geocoding hit rate. Reduced crime rates of mapped points, aggregated to census tracts are compared for a statistically-significant difference. The results move towards a first estimate of a minimum "safe" geocoding rate.

A Multi-City Study of Spatial Scale, Land-Use Patterns, and Part I. Crime Rates

Karen L. Hayslett-McCall, Stephen A. Matthews

In this session, presenters are using GIS technologies and state-of-the-art spatial statistics to explore the degree to which Part I crime patterns in neighborhoods are similar across multiple cities. The selected study cities vary in size, ecological patterns, and social patterns. Researchers contend that the most salient factors to

more readily identify Part I crime patterns can be found with creative use of ecological and contextual data that are rarely used in crime analysis. The presentation uses these physical and social characteristics to better model the real world in which crimes are actually happening. The presentation explores the degree to which scale of analysis matters in studies of urban crime (e.g., blockgroup, tract, and police district). This research focuses on the application of GIS technologies coupled with spatial and hierarchical modeling to analyze crime data in conjunction with tax parcel, unique structural data, and census data. The study extends both prior crime research and applied work conceptually and methodologically. Presenters expect that efforts can be replicated in both the academic and applied realms of crime research. This GIS application focuses on the creation of accurate databases of neighborhood contexts and the application of point- and area-based spatial statistical techniques to better understand patterns of various Part I Crimes. The researchers have brought creative thinking to GIS use, both in crime research and police department applications in order to integrate new types of data and apply rarely used statistical methods in crime analysis. The paper concludes by stressing the importance of incorporating (where possible) spatial structure in models for varying analytical scales and revising methodologies currently in use for crime analysis generally.

Understanding School Safety Issues Both On and Off Campus

Mapping School Safety

Robert Feliciano

Columbine High School's shooting drove home the need to have information at our fingertips during a response to school violence. Thirty-six minutes after the shooting at Columbine began, police officers were looking for a map or blueprint of the school. The aftermath of the incident caused schools districts across the nation to reevaluate their plans for responding to school violence during critical incidents. Geographic Information Systems (GIS) are an excellent tool to use to plan for a response to a critical incident at our schools. Mapping the wealth of information that is available at school is a method of accessing spatial information with a click of a mouse. Answers regarding critical matters can be obtained immediately. Giving public safety officers the ability to visualize information using GIS can improve safety for all concerned.

While working on an advanced training program in California, I selected a project that involved the use of GIS as a tool to map our schools prior to a critical incident. What better method of preparing for a critical incident than to apply GIS technology to map the wealth of information that a school contains? An analytical part of the training program was to develop a pilot program that began in April of this year. At the end of the class, the students evaluated the utility of the GIS technology.

This presentation will discuss the use of GIS as a tool for school safety and share with the attendees the result of the pilot program presented at a regional law enforcement training center. The presentation will discuss how the author used Arc View 3.2 to import a CAD drawing of a school, and then during the class, add views and themes that could be accessed immediately during incidents.

Schools as Attractors and Generators of Crime: Routine Activities and the Sociology of Place

Caterina Gouvis

The study of places has recently gained prominence as a subject for sociologists and criminologists. A leading sociological theory of crime — routine activities theory — has been a major contributor to understanding the concentration of crime at places. Opportunities for crime arise when three characteristics are present: a motivated offender, a suitable target, and a lack of capable guardians. The objective of this research is to use the routine activities approach to further develop a sociology of place by examining the effect of place — in particular, schools — on violence at the block level. Does the actual place create opportunities for violence? Or is the proximity to a dense pool of offenders or “bad neighborhoods” the problem? The proposed research attempts

to disentangle the effects of the activities going on at a place, the supply of offenders and targets, and the physical characteristics of that place. The PowerPoint presentation outlines the study and its findings, highlighting the use of GIS to create relevant variables and the use of spatial statistics to model violence at the neighborhood block level. Implications for community crime prevention will be discussed.

Why Can't We All Just Share Data: The Importance of Federal Data Standards

National Spatial Data Infrastructure: Examples of Success Through Data Sharing – An Update

Norman E. Gunderson

This presentation will concentrate on the goals and objectives of the National Spatial Infrastructure and discuss examples of how Federal, state and local programs have been expedited and made more effective through sharing of geospatial data. The role of the Federal Geographic Data Committee (FGDC) in promoting data sharing will be discussed, as well as a variety of products that have been developed by Federal agencies to publish their geospatial data and make it available to other potential users. An update will be provided on the revision of OMB Circular A-16 (which establishes the FGDC and guides geospatial data activities in the Federal government) and other efforts to enhance geospatial data sharing.

The I-Team Geospatial Information Initiative: A Process to Share and Integrate Data for Criminal Investigations, Homeland Security, Emergency Response, and Public Safety

Ronald Matzner, Bruce B. Cahan

The I-Team Geospatial Information Initiative (I-Team Initiative) is the next phase of efforts to build a National Spatial Data Infrastructure (NSDI) essential for E-government, homeland defense, emergency response, public safety, and innumerable programs at all levels of government. The I-Team Initiative addresses the institutional and financial barriers to the production of seamless, nationally consistent data that can be shared and integrated easily. It incorporates four essential elements that must be realized to transform spatial data into geographic information for rapid and effective decision making:

- Identification and use of efficient data life cycle business processes
- Development of core data content standards and data models
- Development of a Federal integration plan and integration models
- Financial incentives that may be needed by many local governments

Recent terrorist events in New York and Washington illuminated a nationwide problem. Although there is a wealth of geographic data available from a myriad of producers, it is not being collected in ways that enable rapid integration and analysis of the data, especially in emergency situations. Gathering incompatible and duplicative data, verifying its timeliness, determining its quality and accuracy, and integrating it without common data content and exchange standards all take too much time and reduce the ability to respond to emergencies.

A project of the Federal Office of Management and Budget and other strategic partners, the I-Team Initiative is ideally positioned to mobilize the support and resources needed to respond most effectively to these challenges. By unifying and simplifying data processes, developing standards and integration models, and aligning participant needs and resources, the I-Team Initiative will supply the missing ingredients needed to save lives and respond rapidly to emergencies. Jurisdictions at all levels of government will have more immediate access to accurate and current data, unleashing the power of networked data for better decision making to enhance preparedness, deterrence, homeland security, emergency response, and many other critical health and public safety applications.

Concurrent Panels, Monday, 8:30 am – 10:00 am

ABCs of RFPs for GIS

ABCs of RFPs for GIS

William Romesburg

Buying the tools that are necessary for a successful crime mapping solution represents an enormous hurdle for many specialists and administrators. With critical legal and functional components, many turn to the consulting field for assistance with assembling bid documents that will both protect the agency and identify the best product. This session will reveal the key steps for planning, assembling, and using a comprehensive request for proposal (RFP) document.

Analysis of Auto Related Crime

Patterns of Alcohol Involved Crashes and DWI Arrests

Robert H. Langworthy, Elizabeth R. Groff, Matt Giblin

This paper explores the spatial overlap between DWI enforcement activity and alcohol related traffic accidents in Anchorage. Our intent is twofold: (1) develop a methodology for comparing the locus of enforcement activity to the locus of problems, and (2) apply this method of analysis to drunk driving data in Anchorage.

Problem-Oriented Policing and GIS Applied to Larceny from Auto

Matthew White

This presentation discusses a survey of a problem-specific project dealing with Larceny-from-Auto crimes in Charlotte, North Carolina. Officers, command staff, management analysts, academic advisors, and district attorneys needed to work together to overcome the complex hurdles that appeared while trying to impact what might seem to be a relatively simple problem. Special attention will be given to GIS analysis and how it was used to help identify, define, and attack the problem as well as how GIS is employed to assess the impact of many changes being instituted in the city of Charlotte.

Burglary Analysis and Research

Incidence and Time Course of Repeat Victimization for Commercial Burglary and Robbery

Deborah Lamm Weisel, Don Faggiani

Non-residential crime is an understudied phenomenon. Commercial burglaries account for approximately seven percent of all reported crime while commercial robberies account for up to 60 percent of robberies in large cities. A large proportion of commercial burglaries and robberies occur at addresses which are repeatedly victimized. This presentation examines commercial burglaries and robberies in four large jurisdictions, identifying the incidence of multiple victimization. This study presents research findings from a portion of an NIJ-funded study of repeat victimization in Austin; Miami; Montgomery County, Maryland; and Indianapolis, Indiana. The findings are presented spatially, to illuminate the way commercial burglaries and robberies cluster. To examine the relationship between repeat victimization and hot spots, the highest crime census tracts in each jurisdiction were selected to compare incidence, prevalence and concentration of repeat victimization with one-time occurrences. The study also presents findings about the compressed time course in which subsequent

victimization occurs. This study builds on early findings presented at the 2000 CMRC conference on residential burglary. As with residential burglary, the commercial burglary and robbery findings provide unique insight into development of problem-oriented responses to recurring crime problems.

Property Crimes and Pawn Shops: A Connection Between Crime and Place

Kenneth W. Maly

In 2000, the city of San Antonio experienced an 11.3 percent increase in property crimes over the previous year. In seeking out the root of this problem, analysts began to examine the motives behind property crimes and the thriving stolen goods market in the city. It is their contention that much of the property stolen in San Antonio passes through one of the many area pawnshops, flea markets, and other dealers of second-hand goods in the city.

The presentation will examine the process by which stolen merchandise is converted to cash through dealers of second-hand goods and what law enforcement agencies can do to disrupt this market. Also discussed will be the geographic relationship between hotspots of property crimes and markets for those goods, methods to track transactions of second-hand goods, and legislation that exists in many states and municipalities to control these businesses.

GIS for Courts and Community Corrections

When Police Get Probation Data: A Look at Some Police Mapping Uses and Applications

Vincent J. Webb

This presentation describes police uses and mapping applications of a database that combines police and probation data. The setting is Phoenix/Maricopa County, Arizona and the partner agencies are the Phoenix Police Department and the Maricopa County Adult Probation Agency. For nearly two years, these two agencies have been working to develop a shared database consisting of selected data elements from the country's probation databases together with data from the Phoenix Police Department's Record Management System. The presentation describes a variety of police tactical and strategic crime analysis/mapping applications of the database. Additionally, some of the issues in the development of the database and prospects for future applications are reviewed.

Implementing GIS for Juvenile Court Judges, Managers, Administrators, and Probation Officers

Nelson R. Moore

The primary objective of this presentation is to discuss strategies for implementing and developing a Geographical Information System (GIS) within a juvenile court center and probation department. This presentation discusses, in particular, how to develop and implement GIS in a judicial environment for court personnel with inherently different professional objectives? The presenter will also provide some useful alternative sources for locating and acquiring GIS maps and data that can significantly enhance the overall quality of GIS research. In addition, examples of integrating social, health, and economic data into agency research to expose related underlying causes of crime within a community or neighborhood will be presented. The use of social and demographic data can provide invaluable statistical evidence when applying for grants or developing new crime reduction programs.

This presentation is designed for GIS users who may need guidance or assistance in developing a new GIS application. The integration of social, health, or economic data may benefit the experienced GIS user as well.

Sharing Data for Successful Problem Solving

GADC – Beyond 2001

Ronald Barrett

The Greater Atlanta Data Center (GADC), established in 1998, is a cooperative effort aimed at establishing a network among law enforcement agencies to improve the use and dissemination of information relevant to reducing crime and violence in the metropolitan Atlanta area. The primary purpose of GADC is to provide law enforcement agencies the technical assistance and support to implement a practical, flexible, secure, and results-oriented geographic information system (GIS). This is being accomplished through the development of a secure network, a structured database of up-to-date crime incidents, and an ArcView-based GIS application, called GADCmap, that will allow police departments to identify, anticipate, and report on emerging crime patterns across jurisdictional boundaries. The presentation focuses on the history of this project from its inception through the ongoing transition from a frame relay/router-based crime mapping system with limited partners to an Internet-based virtual private network that is capable of servicing up to 5,000 users. Statewide capabilities will be illustrated along with integration of crime data with other social service provider information.

Sharing GIS Resources on the Web

Kevin Armstrong

Each year a plethora of crime data are recorded by federal, state, and local law enforcement agencies in the form of calls for service and arrests. Due to security/privacy issues and political repercussions, most of these data never make front-page headlines and only reside as perceptions in the minds of the public. However, the introduction of Internet mapping has provided an excellent forum for shading GIS/crime data. The Washington/Baltimore High Intensity Drug Trafficking Area (HIDTA) has created several sites for disseminating data both internally and for public use. These sites provide an example of the current functionality of Internet/intranet mapping and the benefits for end-users.

Strategic Approaches to Community Safety Initiative in Winston-Salem, North Carolina

Julia B. Conley

Winston-Salem, North Carolina, was the first city to develop a Community Safety Information System (CSIS) as part of the Department of Justice (DOJ) sponsored Strategic Approaches to Community Safety Initiative (SACSI). The Winston-Salem Initiative has successfully focused on the implementation of research-based strategies to reduce and prevent juvenile violence. CSIS, an Internet map server application that integrates diverse community data from multiple agencies, was developed to be an analytical tool to assist the local SACSI efforts. The challenge to enhance CSIS to successfully meet the needs of SACSI has continued. Last year, CSIS was enhanced to integrate calls for service and to support arrest queries. The home addresses of offense participants were added as another GIS layer. In the near future, modifications will be made to the migration process for updating the database by appending rather than performing complete data replacement, and to the geocoding process to improve the match rate. CSIS has been designed to simplify the integration of additional GIS layers, which allows the application to continue to evolve as shifts in crime focus or emphasis occurs. CSIS continues to be enhanced to expand the functionality with new data layers, such as last known home addresses of prisoners who are in the local database released from or to the county. Through the ground-work of SACSI and the partnerships already established, the Winston-Salem Forsyth County School system was selected for the Winston-Salem/Police Foundation Safe Schools Partnership, funded by NIJ's Safe Schools technology grant. The Winston-Salem/Police Foundation Safe Schools Partnership is building on the existing cooperation and data sharing in place with SACSI to develop a GIS safe schools mapping application

to track crime and calls for service at schools and surrounding neighborhoods and walking zones. The work in Winston-Salem to reduce juvenile violence and improve community safety continues.

What's New in CrimeStat II

What's New in CrimeStat II

Ned Levine, Richard Block

CrimeStat II is the latest release of the CrimeStat spatial statistics program. Ned Levine will discuss and illustrate the new routines in CrimeStat II. These include several new hot spot routines—the mode, the fuzzy mode, the Stac routine (from the Illinois Criminal Justice Information Authority), and risk-adjusted nearest neighbor hierarchical clustering—and several space-time interaction routines, including the Knox and Mantel indices and a correlated walk analysis. The program now includes several routines for analyzing the behavior of serial offenders, which can help in the development of tools and theory for a more comprehensive analysis of offender travel behavior.

Concurrent Panels, Monday, 10:30 am – 12:00 pm

Current Policing Issues

Community Correlates of Serious Assaults on Police

Eric S. Jefferis, Robert J. Kaminski, Joann Gu

Community context is thought to be critical to a thorough understanding of police behavior. Similarly, we argue that assaults of police officers are best understood in light of the community context in which they occur. Utilizing multivariate regression models, this study analyzes aggravated assaults on Boston police officers at the block-group level. Issues of multi-collinearity, spatial auto-correlation, and the rare-event count nature of the dependent variable are addressed. Findings indicate that areas characterized by high levels of resource deprivation, neighborhood disorganization, offender residential density, and violent crime represent significant risk factors for police.

Use of GIS for Assessing Racially Biased Policing

Deborah Thomas, Sandie Norman

The role that race and/or ethnicity plays in police stops has become a point of contention in numerous communities across the U.S. and has led many to question whether biased policing is taking place. In response to this national concern, several police agencies, such as San Diego, Seattle, and Richmond, are in various stages of implementing studies to evaluate the extent of biased policing. Data collection and analysis pose huge challenges in nearly all studies of this nature and, in fact, will impact the types of conclusions that can be made. Mapping technologies can improve the integrity of biased policing studies in many ways. First, data integration from numerous sources is one of a geographic information system's (GIS) greatest capabilities. As such, a GIS can be used to generate information on comparison groups. In this way, the data collected by the policing agency can be compared to a general population of people who are, in theory, susceptible to being stopped. Another way that GIS can contribute is by including the fact that population characteristics vary geographically. GIS allows the makeup of identified comparison groups—such as neighborhood demographics, driving behavior, and police presence, among others—to be incorporated geographically into the analysis. Finally, GIS could be used throughout the study process in a participatory fashion for including community and agency perspectives into the analysis phase.

Denver, Colorado, is in the beginning stages of implementing a biased policing study that incorporates a GIS component. Importantly, the Denver Police Department is including both traffic and person stops, which poses a unique set of challenges in analyzing the data. This presentation will describe the ways in which GIS can be used in the process broadly and then describe its use in the Denver study to date, highlighting both data collection and analysis issues.

Evaluation Research

Interactive Crime Mapping: Resource Management Tool

James Glass, John Conte

In the 1990s, many law enforcement agencies embraced the concept of New York Police Department's (NYPD) CompStat. The San Antonio Police Department (SAPD) was one of those agencies; in 1998, the SAPD began the Management Accountability Program (MAP). What has since evolved is a program that relies heavily on computer GIS mapping in combination with intuitive criminal intelligence. This presentation will highlight the methods the department has developed to not only influence decisions made by upper command to fight crime but also how GIS information is used by detectives and patrolmen in the field.

Spatial Model to Evaluate Impact Effects of Observation and Surveillance Police Stations in a Large Brazilian City

Renato M. Assuncao

This paper describes a spatial analysis of point patterned crimes in a large Brazilian city to evaluate the impact of the introduction of highly visible police stations, called Observation and Surveillance Stations (POVs), in downtown. The project develops a statistical model where two parameters capture the crime time trend and the POV effect in terms of crime incidence. The main conclusion is that the POV presence decreases substantially two kinds of serious crimes incidence but, for most crimes, the impact is neither significant nor negative, meaning that there have been more reported crimes after the installation. This last effect is interpreted as a reporting level change, since these increasingly reported crimes are less serious; and it is known that they often have a large degree of underreporting under normal conditions.

Hot Spot Identification Methods

Combining Mapping Methods to Help Law Enforcement Pinpoint Hot Spots

Joseph Ryan, Kevin Armstrong

The Washington/Baltimore High Intensity Drug Trafficking Area (HIDTA) Evaluation and Crime Mapping Unit's main objective is pinpointing the locations of drug hotspots throughout their region in an effort to more effectively utilize police personnel for drug enforcement. We have established that 10 percent of drug event addresses account for 20 to 60 percent of all the drug event activity. In theory, if the events from those selected locations can be suppressed, then 20 to 60 percent of the drug events can be eliminated. Identifying general areas and narrowing down hotspots to the specific problem streets and addresses is the most effective way to target drug activity. The Evaluation and Crime Mapping Unit uses the Minimum Plotting Density (MPD) technique created by John Eck and Jeffrey Gersh, a form of repeat address mapping (RAM). Recently, this unit has realized the need to supplement the MPD technique with other types of hotspot identification tools. Choropleth maps, grid maps, and three-dimensional maps are also used by HIDTA to aid in hotspot identification. Hotspot techniques have limitations, so by utilizing several different techniques to evaluate crime clusters, we offset the limitations of using just one method.

Data Clustering Using Artificial Neural Networks (ANNs) as a Precursor to Crime Hot Spot Prediction

Jonathan Corcoran, J. A. Ware

Crime rates differ between different types of urban district, and these differences are best explained by the variation in the differing populations that use the urban sites. While a database of violent incidents (location, cause, victim details including injuries, and home address) is rich in spatial information, studies to date have tended to be limited to simple statistical analyses of these variables. However, a much richer survey can be undertaken by linking this database with other spatial databases, such as the Census of Population, weather, and police databases. Such information can improve understanding about the environment in which the incidents take place and the home environment of the victim or perpetrator. While geographical information systems can be used to identify simple trends (for example the relationship between unemployment and violence at ward, enumeration district, or postal code level), other not so obvious trends may lie undiscovered in the database. ANN techniques have recently gained attention as a means of discovering such hidden information and detecting trends within databases.

This paper articulates the first stage in the development of a system designed to help facilitate the prediction of future crime hot spots. For this stage, a series of Kohonen Self-Organising Maps (KSOM) are used to cluster data in a way that allows common features to be extracted. The Authors wish to express their gratitude to their collaborators at South Wales Police, The University Hospital of Wales, Cardiff Bus, and Safer Cardiff.

Detecting Hot Spots Using Cluster Analysis and GIS

Tony H. Grubestic, Alan T. Murray

One of the more popular approaches for the detection of crime hot spots is cluster analysis. Implemented in a wide variety of software packages, including CrimeStat, SPSS, SAS, and SPLUS, cluster analysis can be an effective method for determining areas exhibiting elevated concentrations of crime. However, it remains a particularly challenging task to detect hot spots using clustering techniques because of the uncertainty associated with the appropriate number of clusters to generate as well as the difficulty of establishing the significance of individual identified clusters. Using crime data from Akron and Lima, Ohio, this presentation explores diagnostics for resolving such issues in a geographic information system (GIS) environment.

Mapping in Small Town U.S.A.

Mapping in Podunk: Issues and Problems in the Implementation and Use of GIS in Small and Rural Law Enforcement

Derek J. Paulsen

Although overall use of GIS within law enforcement has increased dramatically over the past several years, its use has actually declined among agencies serving populations under 50,000. Much of this decline may be attributed to the lack of literature addressing the specific issues and problems that small and rural law enforcement agencies face when attempting to implement and use GIS for crime mapping. Despite the fact that small and rural agencies account for approximately 90 percent of all U.S. law enforcement agencies, the vast majority of research and literature on GIS implementation and analysis deals exclusively with large urban agencies. This presentation is designed to remedy this lack of research and discussion in this underdeveloped area. Specifically, this presentation will discuss the major issues and problems that small and rural agencies face in implementing GIS and in conducting spatial analysis of crime problems. In addition to a presentation of findings, important policy and analytical implications will be discussed.

Mapping Non-Urban Crime: Issues of Data and Technology

Jay T. Gilliam

There are many concepts that make mapping crime in non-urban areas quite difficult. This paper focuses on two key areas that are crucial to the success of mapping non-urban crime. We begin by discussing the various problems we discovered while attempting to establish a crime analysis center for non-urban police jurisdictions. We concentrate on the deficiencies in technology and data that are commonly found throughout most small police jurisdictions. We identify and address each of the problems we encountered while working with a local non-urban police department. Furthermore, we discuss the variety of methods used to resolve each of these problems. Next, we turn our attention to the issues of data. More specifically, we are concerned with the reliability and validity of the crime data generated within small police jurisdictions. We have found extreme variation in how small police departments log and code their crime data. Most small police agencies lack the incentive to log their data in a favorable method for performing crime analysis, thus, a large part of the crime data found in non-urban communities is not conducive for mapping crime. We discuss how to overcome the numerous data issues found in non-urban crime data and our analysis demonstrates the differences between raw and cleaned data. We also discuss the reliability and validity issues of using crime data that has not been carefully checked for errors.

Using Regional Approaches to Establish GIS in Small to Medium Police Jurisdictions: A North Carolina Perspective

Irvin B. Vann, G. David Garson

Regionalization may be a means of sharing costs, experience, and expertise among jurisdictions which otherwise would not have the critical mass of resources to implement crime mapping effectively. Regionalization is also an appropriate response to the high mobility of crime in today's society, allowing the tracking of crime patterns across jurisdictional boundaries. Existing regional institutions, such as North Carolina's networks of regional councils, constitute potential infrastructures, which may function as sources of information for interjurisdictional collaboration, grant writing and administration, and technical support based on their existing experience in geographic information systems in land use planning and other areas. Four possible roles for regional councils are presented as starting points for dialog about participants' explorations of regionalization for crime mapping.

Natural Disaster Mapping for Policing

GIS and Natural Disasters: Policing During Hurricane Hugo

James L. LeBeau

This study examines how the quantity, nature, timing, and spatial distribution of calls to the police changed during the passage of Hurricane Hugo in Charlotte, North Carolina during September 1989. The data for this study emanates from the computer aided dispatch records of the Charlotte Police Department during 1989, which contains over 358,000 geocoded calls for service. Census block data are used to classify the city according to degrees of social vulnerability to disasters. The 14,592 calls from September 22, 1989 (Hugo arrival day) through October 2, 1989 (Hugo recovery day) are compared with other days during the year. Results indicate the number of calls for service during specific hours and days of the Hugo period are much higher than expected. Some types of calls increase dramatically and the calls during the Hugo period are more widespread spatially.

Software to Track Incidents In and Around Schools

Using GIS to Enhance the Study of Crime and School Safety Issues

Priti Mathur, Rachel L. Boba

Arcbridge Consulting and the Police Foundation have developed a computer mapping software package for analyzing crime in and around schools. The program allows the police and school personnel to spatially analyze crime in neighborhoods around schools, particularly the student hangouts and pathways to school. It also produces corresponding reports and charts of crime and safety information. The program will be based on ESRI's ArcView© computer mapping software and will have an easy interface, which allows the use of geographic information system (GIS) functionality without being an expert. The program was developed under an NIJ grant and will be downloadable from the Internet. The purpose of this presentation is to make police and school practitioners aware of such a tool and how they would implement it.

School COP: Application for Tracking School Incidents and Crime

Thomas F. Rich

The National Institute of Justice provided funding to Abt Associates to develop and disseminate a software application for supporting crime prevention and problem solving efforts at K-12 schools. The application, entitled the School Crime Operations Package (School COP), enables school safety officers or school administrators to enter, maintain, analyze, and map school rule violations and crimes occurring in and around schools. The underlying rationale for this software application is that it will improve decisionmaking on school violence prevention and help build support for school violence prevention initiatives. The application does not require any special software or software licenses to run, other than the Windows operating system, and is available free of charge to any interested school district or other user at <http://www.schoolcopsoftware.com>. Since January 2001, School COP has been widely distributed through the COPS In Schools training conference series, sponsored by the Office of Community Oriented Policing Services. This presentation will provide an overview of School COP, in particular its approach to mapping.

Concurrent Panels, Monday, 1:30 pm – 3:00 pm

Analytical Techniques to Support Crime Prevention

Beyond Description to Analysis with Geographic Information Systems

George F. Rengert

Mapping is used by crime analysts to identify spatial clusters of crime and trace their persistence over time as treatment is applied. Recently, analysts began to move beyond descriptive techniques to analyze what caused concentrations of crime to form in the first place. These analytical techniques are being developed to aid in tactical deployment of police and situational crime control. This presentation focuses on newly developed techniques of crime analysis using geographic information systems (GIS). The presentation begins with simple techniques using point, line, and polygon features to identify environmental barriers to criminal movement and the arrangement of crime within a building. It concludes with analytical methods using the overlay feature of GIS to create “new geographies” to augment census boundaries. Examples of the analysis of these “slivers” to identify combinations of factors associated with microenvironments of crime are discussed.

Narrowing the Search: Utilizing a Probability Grid in Tactical Analysis

Bryan Hill

This presentation addresses the current use of the “probability grid method” (PGM) as it pertains to tactical crime analysis in the ArcView Geographic Information Systems (GIS) environment. In addition, a specific robbery series analysis is discussed which employs the PGM process. This includes an outline of the steps to produce a useful probability grid as well as discussion of other factors an analyst should consider when creating a probability grid. Most importantly, any current statistical method of predicting the next hit location in a crime series is operationally ineffectual when the suspect covers a large geographic area. The PGM method allows the analyst to use sound statistical methods as well as intuitive thinking to narrow the focus and potential hit area.

Discussion Panel: Building a Data Sharing Infrastructure: COMPASS

How Three COMPASS Communities are Dealing with Key Issues

Erin Dalton, Cletus Hyman, Jim Pingel, Gerard Sidorowicz

COMPASS (Community, Mapping, Planning, and Analysis for Safety Strategies) is a data-driven approach for enhancing community safety through collaborative, proactive problem solving. Its key components are collaboration among local agencies and community interests; creation of a comprehensive data infrastructure containing crime, demographic, and other neighborhood-level information; strategic analysis of the data; and a research partner who will analyze the data, help develop innovations, and evaluate their outcome.

At the federal level, COMPASS is a collaboration between the National Institute of Justice, the Bureau of Justice Statistics, the Bureau of Justice Assistance, the Office of Juvenile Justice and Delinquency Prevention, the Executive Office for Weed and Seed, and the Office of Community Oriented Policing Services (COPS).

There are currently three COMPASS sites funded at different phases: Seattle, Washington; Milwaukee, Wisconsin; and, East Valley, California. While all three of the sites are implementing the specific pieces of the model, the differences in their approaches are worth noting. Much can be learned from the different ways the three sites are approaching (1) a management infrastructure and constituency for COMPASS, (2) democratization of the data, (3) privacy and confidentiality issues, (4) primary and secondary use of the data, and (5) sustainment of the initiative. The purpose of this panel will be to discuss these differences.

Getting Started with the Community Policing Beat Book

Getting Started with the Community Policing Beat Book

Kurt Smith

The Community Policing Beat Book provides a quick and easy tool to distribute map-based information to the front line. Most law enforcement agencies have, or have access to, the basic hardware, software, and data needed to create their own Beat Book. After a practical discussion of how to get the Beat Book going, current applications for problem solving, managing operations, and critical incidents/threat assessment will be addressed. Opportunities to network with Beat Book users at this forum will ensure your first efforts will yield success and potential uses can become realities when you return to your organization.

Mapping Firearms Markets

Mapping Gun Seizures and Gun Crime in a Problem Solving Context

Scott H. Decker

Advances in the use of multiple police data sources for mapping purposes in the past several years have been significant. This paper reports on the results of using addresses of gun recovery locations for problem solving purposes. These data are used in combination with calls for service and violent crime data to describe the crime characteristics of areas in which large numbers of guns are recovered. The paper emphasizes the role of such data in creating problem solving approaches to violence.

Firearms Markets: New Measures in Support of Firearms Trafficking Investigations

John R. Freeman

In any given year, the Bureau of Alcohol, Tobacco, and Firearms (ATF) traces the movement in commerce of hundreds of thousands of crime guns from manufacturer or importer to retail consumer. In addition to generating individual investigative leads to law enforcement agencies, ATF examines this accumulated information, seeking patterns that indicate illicit firearms trafficking activity. This presentation will report some recent research, by ATF and by our academic partners to develop new indicators of firearms trafficking. Some of these indicators are spatially based. For example, the agency is beginning to examine both the time and the distance between the purchase of a gun and its subsequent recovery by the police. Analysts are also developing indicators based on the geographic proximity of purchasers, possessors, and their associates, which will zero in on specific transactions that may provide investigative leads. Finally, GIS is used in a variety of ways to analyze data that point to changes in demand for different types of firearms.

Topical Applications of GIS

Smuggling Operations Revealed Using GIS

Daniel Isenberg

The Border Patrol is the mobile uniformed enforcement arm of the Immigration and Naturalization Service. Their mission is the detection and prevention of illegal entry and smuggling of aliens into the United States. Border Patrol agents perform their duties along and in the vicinity of 8,000 miles of international boundary by automobile, boat, aircraft, horseback, snowmobile, jet-ski, and afoot. Most of the areas patrolled by the Border Patrol are remote, with varying terrain and sub-terrain, such as storm drains and tunnels. These areas are normally accessed using unnamed and unmaintained roads or trails. The Border Patrol does not have the luxury of tracking events using conventional geo-code methods, with a street map, as do other law enforcement agencies.

The revolution in GIS and desktop computing has changed this situation. The Border Patrol now utilizes ArcInfo GIS, Global Positioning System, and biometric identification to map out operational areas, track events, and analyze smuggling patterns. Other technological advancements in the field of remote sensing are being tested in a joint effort with San Diego State University. With the use of ERDAS Imagine, new and unprecedented analysis is becoming available on smuggling activities and their operational impact.

Using GIS to Reconcile Crime Scenes with Those Indicated by Serial Criminals

Antony K. Cooper, Piet Byleveld, Peter M.U. Schmitz

Sometimes, when serial criminals are caught, they admit to their crimes and are willing to point out crime scenes to the police. The South African Police Service (SAPS) then sends independent police officers with the suspect to document those locations he indicates. The CSIR has been assisting detectives and prosecutors prepare selected cases for court, by compiling maps of the relevant details, which enhance the ability of the court to follow the proceedings of a complex case. For serial criminals, they show the crime scenes attributed to the suspect, those indicated by the suspect, and the routes taken by the suspect with the independent officers. When compiling such maps, great care needs to be taken over the accuracy of the data, which includes revisiting the scenes with a GPS receiver to record their coordinates. This quality assurance highlights discrepancies between the crime scenes described in case dockets and those the suspect pointed out, allowing the investigators to link additional dockets to the suspect. It also highlights any errors there might be in the compilation of the original dockets, allowing the prosecutor to present a better case to the court.

Using Spatial Analysis to Recover Missing Children of Family Abductions

Geraldine P. Kochan

The National Center for Missing and Exploited Children (NCMEC) assists parents and law enforcement agencies in locating children who have been abducted by non-custodial parents and/or other family members. NCMEC is the process of analyzing detailed information from over 1,000 cases reported to the Center in which the child was recovered during the 1999-2000. NCMEC hopes this new knowledge will lead to more successful recoveries.

NCMEC has been collecting data on Family Abductions (FA) since 1984. However, several years ago a more detailed database was implemented in order to capture additional and more precise information on missing children cases. The new database also includes spatial data. NCMEC has begun to analyze both the spatial and non-spatial variables.

Prominent themes in the NCMEC's Family Abduction Study include information on abductor(s) (non-custodial father or mother, noncustodial grandparent(s); and other noncustodial relative); duration of abduction or length of episode; methods used in taking, keeping, detaining or concealing the child; ages of child at time of abduction and recovery; health notes of children; status of the relationship between abductor and custodian; and some psychological characteristics of the abductor.

Since NCMEC keeps track of the "missing from" and "recovery locations" of all the children, future plans include calculating the distance traveled in each abduction case. This information will be cross-tabulated with the abductors. Other plans include representing non-spatial data as landscape information. Here non-spatial data will be represented as (X,Y) coordinates. The data will be manipulated and displayed using ESRI's ArcView and Spatial Analyst. Visualization of non-spatial data as landscape information may uncover previously hidden connections that will assist in understanding the characteristics of family abductions.

Using GIS to Enhance Public Safety

Maximizing Public Safety Returns on GIS Investment in Wayne County, Michigan: Integrating Local, State, and Federal GIS Data for Crime Analysis and Problem-Solving

David Martin, Russell Decrease, Gregory Karmazin

The presentation will describe applications and outcomes of GIS technology in the Detroit Police Department and an initiative to support community problem-solving by Wayne County and Wayne State University. The Wayne County Executive Office, through its GIS Management Unit, has made significant investments

in geospatial data and geographic information systems (GIS) to enable smarter and more efficient government operations. In addition, the county's use of data sharing and enhanced access agreements with local municipalities and institutions has helped create an environment that propagates the use of its high-quality GIS data and one that supports the development of innovative GIS applications. Wayne State University, through its Urban Safety Program, works with local law enforcement agencies and Detroit community groups. WSU pioneered crime mapping with the Detroit Police Department and is now working with the county and city of Detroit to integrate local, state, and federal GIS data to support community problem-solving and public safety applications.

Crime Mapping in the Buenos Aires Province of Argentina: Initial Experience and Current Decentralization Trends

Gastón Pezzuchi, Jorge Hector Ortiz

This presentation deals with the introduction of a Crime Mapping and Analysis Unit at the Buenos Aires Province Police Force (Ministry of Security). It shows over three years of experience gathered in the field, the first tasks accomplished by that Unit, which included not only computerized crime mapping but also data issues (geo-database creation and crime database update so as to implement the geographic information systems (GIS) paradigm, etc.), the selection of adequate GIS tools (either an off-the-shelf PC and GIS or a self-developed system, etc.), and spatial analysis tools selection, including recent evolution in those tools and aspects such as training needs. Lastly, the discussion deals with current decentralization trends in order to cover the entire province with more tactical approaches and the associated issues of data-sharing, methodology and procedure.

The real-world problems confronted by the unit staff were quite different from those encountered by U.S. agencies starting this type of enterprise. Sharing the Argentina experience and solutions is an effort to repay those who have helped us in our task, and somehow to continue to improve the odds of successful crime mapping in a non-U.S. law enforcement setting (and specially in a Latin-American context, a truly undeveloped area).

The limited financial resources available for the Unit forced staff to make optimum choices and rely heavily on free resources and "good will" from several experts around the world (mostly in the U.S.), who shared their opinions and suggestions at the very early stages of our development. This presentation and sharing of experience expresses appreciation to those experts and may help others willing to set foot in this extremely promising field.

Concurrent Panels, Monday, 3:30 pm – 5:00 pm

Customized Crime Mapping Applications

CrimeShow: Boston Police Department's Crime Mapping Application

Don McGough

In recent years, law enforcement organizations have invested significant resources into crime mapping. The investment has been not only in personnel, training and hardware, but also in the development of customized crime mapping applications. The focus of this presentation will be to demonstrate the Boston Police Department's customized crime mapping application, CrimeShow. CrimeShow possesses state-of-the-art presentation capabilities and sophisticated analytical components. It includes basic mapping and charting functionality, as well as links to on-line incident reports, booking sheets, mug shots and 360 degree interactive photographs (all of which are activated by selecting points on a map). CrimeShow is used by personnel

throughout the Boston Police Department and has been integrated as the primary tool for use during the Department's regular Crime Analysis Meetings (CAMs), Mini- (decentralized) CAMs, and Crime Analysis Roll-Call Briefings.

ReCAP-SDE Program: Free Software for Crime Analysis

Jason Dalton

Information systems for law enforcement continue to become more expensive and complex. They also require large infrastructure resources. A team of students and researchers from the University of Virginia released the first version of ReCAP-SDE, the small department edition, to help give analysts a tool they could obtain without cost, licensing, or heavy infrastructure requirements. Now in version 3, and not just for small departments, the ReCAP-SDE software includes web reporting for use on public or private networks, and generation of density or "hotspot" surfaces tied to the already existing mapping package. Discussion will include the possibility of making ReCAP-SDE an organized open source project, the port of the SDE functions to a web interface already in development, and how users can obtain and upgrade their program, data, and map layers used in ReCAP-SDE.

The Practical Challenges to Deploying a Tactical Crime Analysis Program (RCAGIS) in a Police Department

Paul Herman

The presentation will address the practical challenges to implementing the RCAGIS (Regional Crime Analysis Geographic Information System) program in a medium- to large-sized police department. By way of a case study, Lt. Herman will describe the manner in which he deployed the program in the Baltimore City Police Department. This implementation included the technological logistics of mapping current Baltimore Police data to the specific data requirements of the RCAGIS program, the personnel issues surrounding training police on the practical use of the program, the technical aspects of networking the program to the Baltimore Police wide-area network, and the logistics of updating the program's database both with city data and data from surrounding jurisdictions. While some parts of the presentation will deal with technical issues, the presentation will be of particular interest to those seeking to implement a wide-area crime analysis application, such as RCAGIS. The presentation will deal with practical logistical issues surrounding implementation of a crime analysis program to remote locations/precincts.

Drugs and Crime

Multi-Jurisdictional Crime Mapping: Using Massachusetts NIBRS Data to Examine the Sale and Distribution of Heroin in One Region of the State

Don Faggiani, Daniel Bibel

Crime mapping has been shown to have significant utility for assisting local law enforcement in identifying and monitoring emerging and ongoing crime problems. In theory, the techniques that work for a single jurisdiction can also be applied to regional mapping to support multi-jurisdictional initiatives to enhance inter-agency problem solving and planning. Unfortunately, the technological, policy, and political issues involved in sharing data between jurisdictions frequently inhibit data sharing, making multi-jurisdictional mapping difficult if not impossible. The FBI's National Incident-Based Reporting System (NIBRS) provides a possible solution to many of the issues restricting data sharing. NIBRS provides a standardized data format with a significant number of data quality checks to improve both reliability and validity. NIBRS also allows law enforcement the flexibility to enhance local and state data systems to address specific topical issues. One such enhancement, implemented

by the state police in Massachusetts, is the addition of incident address to the data submitted by each local jurisdiction. The current paper demonstrates how the addition of incident address enhances the Massachusetts NIBRS data, providing a richer analytical system useful for regional crime mapping and problem solving. Using data reported to the Massachusetts State Police for the period January 1999 through December 1999, the paper focuses on the sale and distribution of heroin in one medium sized jurisdiction and its impact on heroin use within the region. In all, narcotics sale and possession data for 15 different jurisdictions is included in the analysis. We discuss the utility of state level NIBRS data for this type of analysis. In addition, we discuss several of the data quality issues related to obtaining reliable results when mapping across boundaries.

Geographic Analysis of the Effect of Drug Treatment Centers on Neighborhood Crime

Susan J. Boyd

Although substance abuse treatment has been shown to reduce crime among those treated, communities resist the establishment of treatment programs within their neighborhoods. This resistance, largely due to concerns that the location of a treatment program within a neighborhood might increase crime, has led to a shortage of treatment programs in many cities. In this presentation, studies of the relationship between two different types of methadone treatment programs and arrests will be discussed and two types of geographic analysis will be compared. The first analysis used arrest data aggregated at the census block group level to study effect of the discontinuance of two mobile methadone treatment programs (MMTPs) on arrest rates. While no change in arrest rates was found in the neighborhoods where the MMTPs were discontinued, in the neighborhoods where the MMTP remained, trends toward decreases in arrests were found.

The second study is a microecological analysis of the effect on crime of fixed site and mobile methadone maintenance clinics. Geocoded arrest data in the vicinity of 12 fixed site methadone treatment programs and four MMTPs are analyzed using arrest counts within concentric circular 25-meter “buffers” drawn around the clinics. The pattern of arrests around the methadone clinics will be compared to similarly obtained buffers around two control groups, hospitals and convenience stores. Preliminary results using linear regression to compare the two types of clinics to each other and the clinics to control sites reveal similar patterns of arrests around convenience stores and both types of methadone clinics. These studies should inform public debate on the effect of substance abuse treatment centers on neighborhood crime and lead to further collaborative studies between law enforcement and substance abuse researchers. In addition, the relative advantages and disadvantages of two methods of analyzing neighborhood crime will be illustrated.

How to “Sell” Your Intelligence Analysis

Maximizing Your Mapping Impact with Effective Use of Color and Presentation Skills

Jerry Ratcliffe

Many spatial crime analysts spend weeks working on a project only to see their efforts wasted through mediocre maps or poor presentations. All that work is wasted as the audience and impact are lost. This session aims to guide crime mappers who might not have taken a cartography or presentation skills class, and will be divided into two halves. The first half will examine the way that people see and perceive color and how this understanding can improve the clarity and impact of maps and graphics. The second half will look at how to convey text and graphical information into an intelligence briefing, using PowerPoint, with some simple guidelines.

“I Could Have Sworn I Parked Here!” Combating Auto Theft with GIS

Mapping Criminal Events: Analysis of Vehicle Theft Using Conditional Locational Interdependence (CLI) Analysis

Leslie W. Kennedy

The locational components of a crime such as vehicle theft can become a part of the overall analysis of crime opportunity. In looking at incidents in Newark, New Jersey, presenters will give a research strategy that allows the study of the extent to which this crime connects to certain locational attributes. To study locational effects, researchers use conditional locational interdependence (CLI) analysis to investigate the link between temporal probabilities of crime incidents and geographical or community features such as grocery stores, roadways, and schools. Conditional locational interdependence occurs when the locational patterns of one type of entity are dependent on another, and when dependence does not extend in the other direction. In this analysis, presenters propose to take account for the indeterminacy of occurrence time through techniques that approximate this value. The crime prevention implications of this approach will be addressed as part of the discussion of the findings from this analysis.

Where to Recover the Stolen Vehicles? Investigating Spatial Relationship Between Vehicle Theft and Recovery Locations

Yongmei Lu

The spatial patterns of vehicle thefts, especially the relationship between vehicle theft locations and corresponding recovery locations, may “suggest” possible gang activities or the presence of “chop shops.” This study analyzes the spatial relationship between these two locations with the intention to assist the practice of recovering stolen vehicles and breaking down the secret channels that criminals rely on when committing vehicle thefts. New spatial analysis techniques are developed, and analyses are conducted on the vehicle thefts in the city of Buffalo, New York. Both geographical information systems (GIS) and spatial statistics technologies are employed.

The spatial relationship between the two endpoints of vehicle theft offense is investigated from three aspects: distance, direction, and correspondence of clusters. Distinct from existing journey-to-crime studies, efforts are made to investigate if the observed distances are significantly shorter than the random distances, given the spatial layout of possible locations of vehicle theft and recovery. Similarly, techniques are developed to exam the randomness of criminals’ travel directions with stolen vehicles as compared to the possible travel directions as defined by the spatial structure of the study area. The study on the correspondence of clusters of two-point sets is new to both spatial analysis and crime application. This part of the analysis is designed to test if the vehicles that are stolen from places close to each other tend to be recovered at places close to each other too. All the techniques developed in this study are easy to extend to other spatial analyses. The analytical methods developed can significantly enhance the effort of “predicting” the spatial patterns of vehicle theft and recovery locations, based on knowledge about solved cases. This can contribute to the practice of vehicle theft suppression and prevention.

Student Paper Competition

Neighborhoods and Crime Rates: A Redefinition of Ecology

Karen L. Hayslett-McCall

Several research studies have identified that the social and physical characteristics of neighborhoods are related to crime. However, researchers are consistently challenged by trying to define and develop physical ecology, including land-use typologies, and by defining appropriate neighborhood sizes. The current research project combines unique methodology while attempting to define and identify relevant land-use patterns that influence property and violent crime rates in a large urban city. Results indicate that mixed land-use is related to crime, and that these effects diminish when the definition of neighborhood size is increased.

Using Crime Mapping to Measure the Negative Secondary Effects of Adult Businesses in Fort Wayne, Indiana: A Quasi-Experimental Methodology

Bryant Paul

An empirical study of criminal activity surrounding exotic dance nightclubs in Fort Wayne, Indiana, was undertaken. Unlike related previous studies, specific attention was given to fulfilling the requirements set out by the Supreme Court for the proper conduct of a social scientific inquiry. A 1000-foot circumference surrounding each of eight exotic dance nightclubs in Fort Wayne was established. Comparison areas were selected in the city of Fort Wayne and matched to the club areas on the basis of demographic features and commercial property composition. The number of calls to the police from 1997-2000 in the areas surrounding the exotic dance nightclubs was compared to the number of calls found in the matched comparison areas. Our analysis showed little difference, overall, between the total number of calls to the police reported in the areas containing the exotic dance nightclubs and the total number of offenses reported in the comparison areas.

Technical Aspects of Building a Data Sharing Infrastructure: COMPASS

COMPASS Technology: Data Gathering, System Design, and Geographic Analysis

Joe Kabel, Nancy A. Olson

The building of a comprehensive multi-jurisdictional, multi-agency database to improve data-driven decision-making in the city is a core component of COMPASS. This presentation reviews foundation-building activities, system design, and analytic contributions to date toward public safety problem-solving in the COMPASS sites. The presentations in this panel will highlight the information system strategies used in the Seattle and Milwaukee COMPASS sites.

Plenary Panel, Tuesday, 7:30 am – 8:15 am

International Interests: Mapping Efforts Across the Globe

International Crime Mapping: Unique Challenges and Opportunities

John Markovic

Major advancements in crime mapping have occurred over the last 15 years. Both the number of police agencies with crime mapping capabilities and the sophistication of those capabilities have grown rapidly. This growth has been most notable in countries like the United States, Canada, Great Britain, Australia, and South Africa where the technological infrastructures are most advanced and where developments of geographic (GIS) information systems in related disciplines have also prospered. From a global perspective, however, it is clear that these technological advances are not evenly distributed geographically. Crime mapping efforts – and geographical information systems in general – are less common and generally less advanced in developing countries.

This roundtable discussion is intended to provide a framework for understanding and explaining the crime mapping challenges faced by law enforcement agencies in developing countries. Participants will seek to understand each other's challenges and share solutions. It is hoped that this interest group will continue to build on the roundtable dialogue through participation on CMRC's listserv and through regional networking, training, and problem solving.

Concurrent Panels, Tuesday, 8:30 am – 10:00 am

Community Characteristics and Crime

Broken Windows Revisited: Do Code Violations Predict Serious Crime?

Katrina Baum

For much of the 1980s and 1990s, the "broken windows" thesis was widely accepted, and its tenets were adopted into methods of policing such as order-maintenance and community policing. However, the theory has recently been the subject of scholarly debate and demands further study. This presentation will discuss research that uses GIS to explore the relationship between disorder, property, and serious offenses. This data will then be used to test a predictive model and its preliminary findings.

Exploring the Spatial and Temporal Dynamics of Crime Before, During, and After Implementation of Community Development Initiatives in Delray Beach, Florida

Jamie Price, Thuy Pham

This presentation will use GIS to assess the relative impacts of community and neighborhood revitalization on crime. Using data from calls for service and arrests, spatial and temporal aspects of crime will be analyzed in concert with community development initiatives occurring in Delray Beach, Florida. Guided by crime and place theory, the relationship between the distribution of different crime types and the physical and social environmental characteristics in the experimental area will be examined. Specifically, the following primary questions will be addressed: (1) How does the overall crime rate in Delray Beach compare to the crime rates in revitalized areas before, during, and after the implementation of community development initiatives? And (2): did crime displacement and/or benefits of diffusion occur in the revitalized areas with respect to location, time of occurrence, and/or type of activities?

Discussion Panel: Spatial Analysis

Spatial Analysis Discussion Panel

Eric Jefferis, Spencer Chainey, Karen L. Hayslett-McCall, George F. Rengert

This roundtable will bring together leading researchers and statisticians to identify and discuss critical issues in spatial statistics and GIS. The discussion will focus on recent developments and areas where further development is warranted. Examples of discussion topics include but are not limited to (1) spatial forecasting, (2) spatial modeling of rare events, (3) the modifiable area unit problem, and (4) apportioning spatial data.

Estimating Crime Across Place and Time

Aorism: Can We Improve on the Uniform Assumption?

Ian P. Williamson

Aorism is the term coined by Ratcliffe to describe the uncertainty about exact time of occurrence which surrounds many property crimes. He has presented a method to estimate an overall time distribution for crimes on the supposition that the time of occurrence of each crime is uniformly distributed within the window in which it is known to occur. An attempt to improve upon this method leads to an intriguing paradox. Resolution of this paradox is likely to increase our understanding of what we mean by a distribution of crime in space as well as in time.

Using Dasymetric Mapping for Spatially Aggregated Crime Data and Exploratory Spatial Data Analysis

Erika Poulsen

With the growing public availability of crime data via such sources as the Uniform Crime Reports, mapping of crime has increased. The Uniform Crime Reports provide data on crime at an aggregate level, meaning that the number of incidents are provided for a particular scale of location, such as state, county, or municipality. Choropleth mapping allows one to visually display this aggregate level data by assigning the value of the variable to the corresponding region and creating a thematic map by using different shades or textures for each value or classified values. However, it is obvious that the incidents are not dispersed evenly throughout the region, and without incident or address level data, methodologies exist that can show how the crime value may be distributed throughout the region. Dasymetric mapping provides a methodology to assist in further refining the distribution of crime in a region by using additional data such as land use and census data. The use of dasymetric mapping is useful for exploratory spatial data analysis with aggregated data. This presentation proposes to show how the spatial transformation of dasymetric mapping can be used to further refine the visual spatial distribution of residential and commercial burglary within political boundaries based on land use and housing data, and how this mapping assists the exploratory spatial data analysis.

Improving Web Research Skills

Improving Web Research Skills

William A. Ballweber, James Fort

This presentation focuses on a comparison of search engines and directories with an effort to maximize web search skills. It also includes special resource sites for criminal, juvenile justice, law enforcement, correc-

tions, and drug policy information. Boolean, wild cards, and field searching techniques will be briefly discussed. The presentation also includes searching the “Invisible Web,” ways to access the enormous segment of the Web inaccessible to search

Police/Public Housing Partnerships

Using GIS for More Effective Crime Prevention Planning In and Around Public Housing Developments: Patterns of Diffusion of GIS Crime Data in Police and Public Housing Agencies

Hal Holzman

In police departments that engage in crime mapping, how widespread is the use of GIS data amongst the staff? Recent research on joint crime prevention planning partnerships between police departments and public housing authorities (PHAs) suggests that the quantity of GIS data and its diffusion within “GIS literate” police departments may be surprisingly limited. Furthermore, this GIS information may not be subjected to anything but the most cursory analysis. How could this be happening; especially when the value of crime mapping as an asset to police operations seems so widely accepted? This paper discusses the research findings noted above and offers several hypotheses as to why GIS technology may be underused, if not undervalued. Among these hypotheses, is the notion that police executives may view GIS primarily as a resource for top level managers and thus limit both the scope of the analysis and the dissemination of such information.

Managing Crime: Using Crime Mapping in Planning Security Strategies in the Context of Multifamily Housing

John G. Hayes, Katrina Baum, Matthew Perkins

Architects, security planners, and managers of multifamily housing have often failed to take into account the historical distribution of crime in making decisions about security strategies such as street redesign, parking, fencing, lighting, access control, and landscaping. As a consequence, many of the strategies employed have been ineffective and have had even facilitated certain types of criminal activities while discouraging capable guardians from exercising control over their environments. The use of crime mapping as a tool for determining design strategies for different areas of a community is a relatively new but promising direction in urban planning. This paper and presentation explores its use in several cities where crime has fallen by more than 40 percent as a result of the changes implemented.

Public Housing Authorities and Police: Partnerships for Crime Prevention in Public Housing Using GIS

Bill Wheaton, David Chrest

This research project, undertaken by the U.S. Department of Housing and Urban Development, Office of Policy Research, seeks to analyze the ways in which the availability of timely, accurate, and detailed GIS crime maps may be used by public housing authorities and police to promote strategic and tactical planning between the two organizations. Three cities have agreed to take part in the research. In each city, GIS maps are generated and distributed to police department and Public Housing Authority (PHA) representatives. Generally two sets of maps are generated for each Public Housing Development (PHD). The first set displays Part I crimes in the PHD and within 300 meters of the PHD. The second set displays calls for service within the PHD and within 300 meters of the PHD. Maps are generated once a month during a six-month research cycle. At the end of each month, the research team solicits feedback from the PHA and police department regarding the use of the maps. The participants in each city provide comments about the map layouts and content and suggest improvements that will enable the maps to display more information. Therefore, the process of map

design and layout is somewhat “evolutionary” for each city. For example, requests were made to include building footprints on maps, to include parcel boundaries, and to create tables of crime counts for each month. The end result of this dynamic process was the creation of maps that most suited the needs of each city.

Feedback and associated observations regarding the usefulness of the maps and the benefits or drawbacks in how they are used will be the source of information to be included in a published guidebook to be developed at the end of the research project. The purpose of the guidebook will be to aid PHAs in other cities in creating and using crime maps and in working with police departments to enhance joint planning and communication between the two organizations.

This presentation will display examples of the maps produced, highlight some preliminary findings, and describe the experiences encountered to date as PHAs and police departments work together with the GIS maps as a basis for strengthening their working relationships.

Public Policy Implications of Mapping

Applications of Mapping Within a Public Policy Environment

Stephen Mihorean

Within a public policy environment, it is often difficult for the decision-makers to decipher the true message from pages of tables, charts, and graphs. Yet, the demand for “evidenced-based” research has never been greater. The Department of Justice Canada is in the very early stages of developing an in-house crime mapping capacity. The aim is to create another medium through which complex data sets can be visualized and understood in a policy context. The purpose of this presentation would be to present some of the applications of mapping within a public policy environment. Using the early experiences of the Department of Justice Canada in this area, some discussion will center on how a policy-oriented agency uses traditional crime-mapping tools. In addition, the results of a pilot exercise will also be presented. To contextualize the material, a brief overview of the Department of Justice will also be provided.

Crime Analysis Mapping in India: A GIS Implementation in Chennai City

Jaishankar Karuppannan, S. Shanmugapriya

In India, though police agencies of Bangalore, Hyderabad, Goa, Mumbai, Delhi, and Kerala use customized GIS, the application of GIS in Indian policing is still in a rudimentary stage. There is a need to apply this potent technology in Indian policing, and the present study was done as a model for the implementation of GIS in Indian policing. The aim of the present study is to analyze the crime scenario of Chennai City, using GIS technology. GIS software such as PC ArcInfo 3.5, ArcView 3.1 and CrimeStat 1.0 were used in the present study. Data pertaining to the property offenses were only taken for the years 1997 and 1999. The crime data were classified under the group of property offenses as robbery, grave theft, house breaking (day), house breaking (night), and chain snatching. The distribution of crime incidents showed that almost all parts of the city are affected by nefarious activities. Except for a few pockets and the forest cover zone in the south, the whole city is witnessing crime incidents. The GIS analysis includes, for example, hotspot analysis, buffer analysis, index of concentration, demographic analysis, and digital elevation models. In the description and analysis of these maps, the researchers succeeded in identifying and marking hotspots of crime, displacement of crime, and the relationship between the mapped crime pattern and the socio-economic characteristics of the city.

On the practical level, the results showed that the Indian police departments could utilize GIS instead of traditional pin maps. This study was submitted to the Police Commissioner of Chennai for further evaluation and

implementation. Based on suggestions given by the authors of the present study, the Commissioner of Police, Chennai City has purchased two licenses of ArcView 3.2 and GIS implementation and started the computer cell of the Police Department of Chennai, India.

Plenary Panel, Tuesday, 10:30 am – 12:00 pm

Mapping and Terrorism

The PENTTBOMB Investigation

Danny A. Defenbaugh

This presentation will focus on the tragic terrorist attack on the World Trade Centers and the Pentagon on September 11, 2001. How the FBI quickly responded to efficiently process the thousands of leads that literally poured into the FBI's offices, both on a national and local level, and how the FBI and other local, state, and Federal law enforcement agencies worked together in an unprecedented display of cooperation and assistance to move the investigation forward will be highlighted. Mr. Defenbaugh will also discuss how the Dallas Division of the FBI worked aggressively to provide the country with unique investigative processes, including "data mining," that were used to trace the movements, communications, and associates of the terrorists during the moments and days prior to the attack. Discussion of the impact the attacks will have for our country and what the FBI plans to do to pro-actively counter the threat of terrorism will conclude the presentation.

Mapping in the Aftermath of the September 11th Attack on the World Trade Center

Deborah Thomas

Geographic technologies, including remote sensing and geographic information systems, can clearly contribute to all phases of the emergency management cycle. The hazards community has a fairly good understanding of their use for preparedness and mitigation, but much more limited knowledge of real-time potential. While certainly tragic, the September 11 attack on the World Trade Center set in motion emergency response efforts that provide a considerable opportunity to evaluate the use of geographic technologies in response to a devastating event. By documenting and evaluating the effectiveness of geographic technologies during the rescue, relief, and recovery stages, we can begin to identify successes and shortcomings that can inform other communities.

Fieldwork was conducted on October 8-10 by a research team from the University of Colorado at Denver and the University of South Carolina in New York City to collect information on mapping activities. Following this visit, an on-line survey was developed to assess people's views of the quality and effectiveness of the mapping efforts. Telephone interviews of many key players garnered further information. This presentation provides an overview of some initial observations and preliminary findings. The overall assessment includes all facets of geographic technologies: data, personnel, software integration, hardware infrastructure, and organizational arrangements.

GIS in Disaster Response in FEMA's Mapping and Analysis Center (MAC)

Leslie Weiner-Leandro

FEMA's emergency and disaster responders use GIS as an effective decision-making tool. The Map-

ping and Analysis Center (MAC), which produces GIS products for disaster response, readily provides accessible, accurate information through its maps, tables, and analyses. MAC staff can quickly generate or update products to provide decisionmakers with a consistent “view of the situation.” Ms. Weiner-Leandro, the Lead Geographer for the MAC will describe the MAC’s major staff roles and responsibilities in disaster response, discuss advantages to using GIS in emergency management, and outline the types of GIS support MAC staff provide at both FEMA Headquarters and Disaster Field Offices (DFOs). Ms. Weiner-Leandro will also describe the types of data used in the MAC’s primary products and introduce the MAC’s two websites: <http://www.gismaps.fema.gov> (Internet) and <http://GISActiveMaps.fema.net> (Intranet). Ms. Weiner-Leandro finishes her presentation with a discussion on recent efforts within FEMA and the agency-wide GIS Working Group to integrate all GIS activities into an enterprise system (E-GIS).